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| **20EE405**  **Hall Ticket Number:**   |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | | **II/IV B.Tech(Regular) DEGREE EXAMINATION** | | | | **August,2022** | **Electrical and Electronics Engineering** | | | **Fourth Semester** | **Generation & Transmission** | | | **Time: Three Hours** | | **Maximum:70 Marks** | | | | | | | |  |
| |  |  | | --- | --- | | ***Answer question 1 compulsory.*** | **(14X1 = 14 Marks)** | | ***Answer one question from each unit.*** | **(4X14=56 Marks)** | | | | | | | |  |
| 1. | a) | |  | | --- | | Define plant use factor? | | CO1 |  |
|  | b) | List the different types of tariffs. | CO1 |  |
|  | c) | Give the reasons for low power factor. | CO1 |  |
|  | d) | What is load duration curve? | CO1 |  |
|  | e) | Write the function of condenser in thermal power plant. | CO2 |  |
|  | f) | What is the role of penstock in hydro power plant? | CO2 |  |
|  | g) | What is Nuclear fission? | CO2 |  |
|  | h) | Define solar cell? | CO2 |  |
|  | i) | Define GMD&GMR? | CO3 |  |
|  | j) | Classify the overhead transmission lines? | CO3 |  |
|  | k) | What is the effect of ground on capacitance? | CO3 |  |
|  | l) | Define string efficiency? | CO4 |  |
|  | m) | Define sag? | CO4 |  |
|  | n) | What is arcing ground? | CO4 |  |
| **Unit –I** | | | | |
| 2. | a) | Briefly explain the methods of improving the Power Factor? | CO1 | 7M |
|  | b) | A generating station has the following daily load cycle :   |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | Time (Hours) | 0—6 | 6—10 | 10—12 | 12—16 | 16—20 | 20—24 | | *Load* (*MW*) | 40 | 50 | 60 | 50 | 70 | 40 |   Draw the load curve and Determine (i) maximum demand (ii) units generated per day (iii) average load and (iv) load factor. | CO1 | 7M |
| **(OR)** | | | | |
| 3. | a) | Explain two part tariff and three part tariff methods. | CO1 | 7M |
|  | b) | An electric supply company having a maximum load of 50 MW generates 18 × 10 7 units per annum and the supply consumers have an aggregate demand of 75 MW. The annual expenses including capital charges are :  For fuel = Rs 90 lakhs  Fixed charges concerning generation = Rs 28 lakhs  Fixed charges concerning transmission= Rs 32 lakhs and distribution  Assuming 90% of the fuel cost is essential to running charges and the loss in transmission and distribution as 15% of kWh generated, deduce a two part tariff to find the actual cost of supply to the consumers. | CO1 | 7M |
| **Unit –II** | | | | |
| 4. | a) | What are the factors considered for the selection of site for hydro-electric power plants? | CO2 | 7M |
|  | b) | Draw and explain the principle of operation of nuclear reactor with a neat sketch. | CO2 | 7M |
| **(OR)** | | | | |
| 5. |  | Explain the layout of thermal power plant with function of each block in it. | CO2 | 14M |
| **Unit –III** | | | | |
| 6. | a) | Derive the expression for voltage regulation in case of short transmission line with the help of phasor diagram. | CO3 | 7M |
|  | b) | A single phase overhead transmission line delivers 1100 kW at 33 kV at 0•8 p.f. lagging. The total resistance and inductive reactance of the line are 10 Ω and 15 Ω respectively. Determine: (i) sending end voltage (ii) sending end power factor and (iii) transmission efficiency | CO3 | 7M |
| **(OR)** | | | | |
| 7. | a) | Derive an expression for Inductance of a Single Phase Two-wire Line. | CO3 | 7M |
|  | b) | A 3-phase, 50 Hz, 132 kV overhead line has conductors placed in a horizontal plane 4 m apart. Conductor diameter is 2 cm. If the line length is 100 km, calculate the charging current per phase assuming complete transposition. | CO3 | 7M |
| **Unit –IV** | | | | |
| 8. | a) | Explain about pin type and suspension type of Insulator with neat diagrams. | CO4 | 7M |
|  | b) | Derive the expression for sag when the conductor is placed between two unequal supports | CO4 | 7M |
| **(OR)** | | | | |
| 9. | a) | Derive the expression for voltage wave and current wave in the concept of travelling waves. | CO4 | 7M |
|  | b) | Derive the expression for critical disruptive voltage when corona occurs on a transmission line. | CO4 | 7M |

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